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ATGCTCGTCGGCGGGCAGCCCTGGCATGGGTGTGCATGTGGGTGCAGCCC
TGGGAGCACTGTGGTTCTGCCTCACAGGAGCCCTGGAGGTCCAGGTCCCTGA
AGACCCAGTGGTGGCACTGGTGGCACCGATGCCACCCTGTGCTGCTCCTCT
CCCCTGAGCCTGGCTTCAGCCTGGCACAGCTAACCTCATCTGGCAGCTGAC
AGATACCAAACAGCTGGTGCACAGCTTGCTGAGGGCCAGGACCAGGGCAG
CGCCTATGCCAACCGCACGGCCCTTCCCGACCTGCTGGCACAGGGCAAC
GCATCCCTGAGGCTGCAGCGCTGCGTGGCGACGAGGGCAGCTTCACCT
GCTTCGTGAGCATCCGGGATTCGGCAGCGCTGCCGTAGCCTGAGGTGGC
CGCTCCCTACTCGAACGCCAGCATGACCCCTGGAGGCCAACAGGACCTGCG
CCAGGGGACACGGTGACCATCACGTGCTCCAGCTACCGGGCTACCCCTGAGG
CTGAGGTGTTCTGGCAGGATGGCAGGGTGTGCCCCTGACTGGCAACGTGAC
CACGTCGCAGATGGCCAACGAGCAGGGCTTGTGATGTGCACAGCGTCCTG
CGGGTGGTGCAGGATGGCACCTACAGCTGCCTGGCGCAACCCCG
TGCTGCAGCAGGATGGCACCTACAGCTGCCTGGCGACGAGGGCAGCTTCACCT
ATTCCCCCCCAGAGGCCCTGTGGGTGACCGTGGGGCTGTCTGTCTCATGG
CACTGCTGGTGGCCCTGGCTTCTGAGGAGGACCAAGGATGGGGAGGGAGAAGGCTC
TGAGGAGGAGAATGCAGGAGCTGAGGACCAGGAATGGGGAGGGAGAAGGCTC
CAAGACAGCCCTGCAGCCTCTGAAACACTCTGACAGCAAAGAAGATGATGG
ACAAGAAATAGCCTGA

FIG. 1

ATGCTCGTCGGCGGGCAGCCCTGGCATGGGTGTGCATGTGGGTGCAGCCC
TGGGAGCACTGTGGTTCTGCCTCACAGGAGCCCTGGAGGTCCAGGTCCCTGA
AGACCCAGTGGTGGCACTGGTGGCACCGATGCCACCCTGTGCTGCTCCTCT
CCCCTGAGCCTGGCTTCAGCCTGGCACAGCTAACCTCATCTGGCAGCTGAC
AGATACCAAACAGCTGGTGCACAGCTTGCTGAGGGCCAGGACCAGGGCAG
CGCCTATGCCAACCGCACGGCCCTTCCCGACCTGCTGGCACAGGGCAAC
GCATCCCTGAGGCTGCAGCGCTGCGTGGCGGACGAGGGCAGCTTCACCT
GCTTCGTGAGCATCCGGGATTCGGCAGCGCTGCCGTAGCCTGAGGTGGC
CGCTCCCTACTCGAACGCCAGCATGACCCCTGGAGGCCAACAGGACCTGCG
CCAGGGGACACGGTGACCATCACGTGCCCCAGCTACCGGGGCTACCCCTGAGG
CTGAGGTGTTCTGGCAGGATGGCAGGGTGTGCCCCTGACTGGCAACGTGAC
CACGTCGCAGATGGCCAACGAGCAGGGCTTGTGATGTGCACAGCGTCCTG
CGGGTGGTGCAGGATGGCACCTACAGCTGCCTGGCGCAACCCCG
TGCTGCAGCAGGATGGCACCGCTCTGTCACCATCACAGGGCAGCCTATGAC
ATTCCCCCCCAGAGGCCCTGTGGGTGACCGTGGGGCTGTCTGTCTCATGG
CACTGCTGGTGGCCCTGGCTTCTGAGGAGAAGATCAAACAGAGCTG
TGAGGAGGAGAATGCAGGAGCTGAGGACCAGGAATGGGGAGGGAGAAGGCTC
CAAGACAGCCCTGCAGCCTCTGAAACACTCTGACAGCAAAGAAGATGATGG
ACAAGAAATAGCCTGA

FIG. 2



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MLRRRGSPGMGVHVGAAALGALWFCLTGALEVQVPEDPVVALVGTATLCCSFS
 PEPGFSLAQLNLIWQLTDKQLVHSFAEGQDQGSAYANRTALFPDLLAQGNASL
 RLQRVRVADEGSFTCFVSIRDFGSAAVSLQVAAPYSKPSMTLEPNKDLRPGDTVT
 ITCSSYRGYYPEAEFWQDGQGVPLGNVTTSQMANEQGLFDVHSVLRVVLGAN
 GTYSCLVRNPVLQQDAHGSVTITGQPMTFPPEALWVTVGLSVCLIAALLVALAFV
 CWRKIKQSCEEENAGAEDQDGEGEGSKTALQPLKHSDSKEDDGQEIA

FIG. 3

MLRRRGSPGMGVHVGAAALGALWFCLTGALEVQVPEDPVVALVGTATLCCSFS
 PEPGFSLAQLNLIWQLTDKQLVHSFAEGQDQGSAYANRTALFPDLLAQGNASL
 RLQRVRVADEGSFTCFVSIRDFGSAAVSLQVAAPYSKPSMTLEPNKDLRPGDTVT
 ITCPSYRGYYPEAEFWQDGQGVPLGNVTTSQMANEQGLFDVHSVLRVVLGAN
 GTYSCLVRNPVLQQDAHGSVTITGQPMTFPPEALWVTVGLSVCLIAALLVALAFV
 CWRKIKQSCEEENAGAEDQDGEGEGSKTALQPLKHSDSKEDDGQEIA

FIG. 4

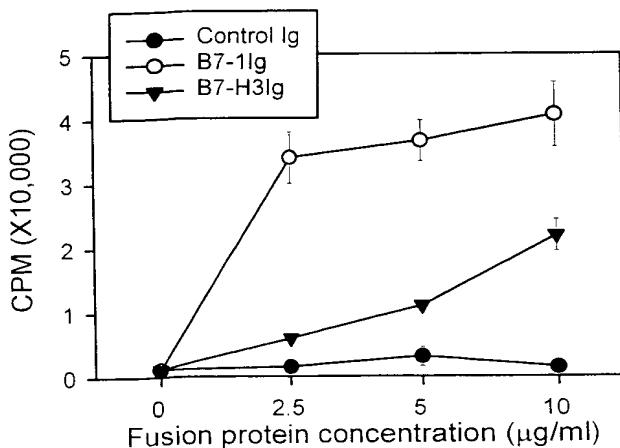


FIG. 8A

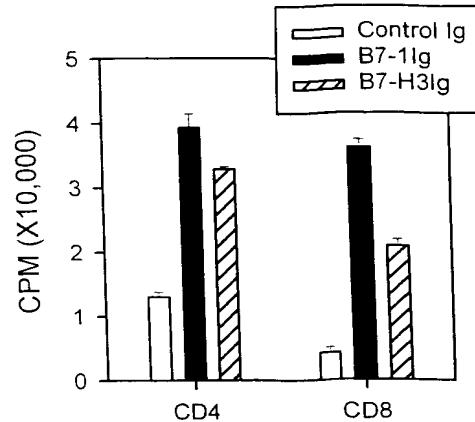


FIG. 8B

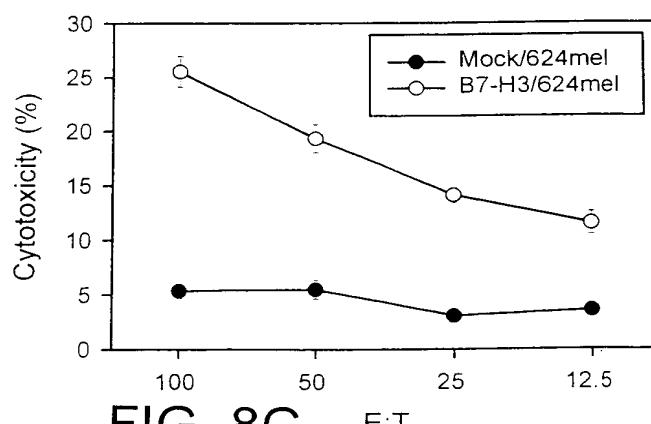


FIG. 8C



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hB7-H3	1	MLRRRGSPGMVHVGA...-LGA[WFCITGA]EVQ[PE]-P[V]A[VGT]ATLCSSESPEPGES[LAQLN]I[WO]	68
hB7-H2	1	MRLGS-----PGLF[FS-SRADTQEK-EYR]AVGSDVELSCAPEGSRFD[NDV]VNYWQ	55
hB7-H1	1	MRIFAVFI---FMTYWHLN-AFTVTVPKD-LYVVEYGSNMTIECKPVEQLDAGLIVNYWE	58
hB7-2	1	MGLSN-----[FV]MAF-LLSGAAPLK-[QAYFNEIADLPCQCFANSQNSLSELW]F[WO]	52
hB7-1	1	MGHTRRQG[S]PSKCPYLNFQ[LV]AGLSHFCSGV[HM]KEWATLSCGNV[VEELAQT]YWQ	67
*			
hB7-H3	69	LTD-TK[VH]SFAE-GDQDGSA[MANRTA]F[PD]L[AG]N[ASLR]LQR[VR]ADEGSF[TC]FVS-T[RD]F[GA]AAVS-	135
hB7-H2	56	TSESKTWVYH[PO]NSLLENDSYRNRAIMS[PAGMLRGDFSLRLFNM]P[DEO]F[HCLM-S-SDS[G]QEM	127
hB7-H1	59	MEDKNIICWHEED-LKVQHSSYQRAR[LKDQ]L[SGMA]ALQITDVKLQDAGYRCMIS-YGGADYKRIT-	127
hB7-2	53	DOENLVI[NEY]LGEK-FDSW[SKY]MGRTSF-----SDSWT[LR]LHNCQIKDKG[YC]IHHHKP[G]M[R]HQ	119
hB7-1	68	KEY...KMWLTMM[SGD]...-MNI[WEYKNRT]FD-----ITNNLS[ML]ALRP[S]DEGTYECV[ML]KYEKDAFREHL	131
*			
hB7-H3	136	QVAAPYSKPSMTLEPNKDLRPGD-T[V]IT[CS]YRYPEAE-[M]F[WD]QDGQGP[V]IT[SGMANE]L-QG[201
hB7-H2	128	VEVTHV[MANES]WPMAPHSPSQD-EL[FT]CT[S]INGYPRPN---M[WM]N[DN]SLDQALOND[TVF]LNMRG[196
hB7-H1	128	VKVMAPYN---KINORILVVD[P]TS-EHELT[TC]A-EGYPKAE---M[WT]SSDHQMLSGK[T]TNSKRE-EKL	190
hB7-2	120	MNSEISW[MAN]F[S]O[P]T[P]SNTENVYIN[LT]C[SS]IHYPEPKMSVLLRTKNS[TEYDGIMQKSQDNV--TEL	190
hB7-1	132	AEVTL[SV]KA[P]FT[PS]ISDFEIP[TS-N-IRR]T[CS]SQFPEPH---[S]M[LE-NGEE]I[NAINT]V[SDQPE]-TEL	197
*			
hB7-H3	202	FDV[SM]RV[V]L---GANGYSCLVRNPV[LO]-DAHGS-VTIT[G]QPM[F]PPEALW[V]I[GL]SV[GL]A	261
hB7-H2	197	YDVSMLRIAR---TIPSVNIGCC[ENV]LQQNLTVGSQT[G]D[TIGER]DX[EN]P[ST]GEKN-A[AM]NSI[A]V[GL]	265
hB7-H1	191	F[N]VTS[LR]INT---TNE[IFYCT]F[R]LDP[E]-[N]TAE-LV[IP]ELPLAHPN[ERT]HLV[IGA]T[LC]	250
hB7-2	191	YDVSISL[NS]F[P]DVT[SN]T[FC]I[LE]D[K]TR[L]-SSPFS-IELED[P]PPD[H]IPW[IT]AV[PTV]I[O]	253
hB7-1	198	YAVSSKLDFNM---[T]NHSFMC[LI]KYGH[RV]-[Q]TFN---MNT[KQEHFP]DNLLPSW[AT]U[SW]	255
*			
hB7-H3	262	LVALAFWC-[W][R]IKCSEEE[NAGA]EDODGE[GEGSKTA]DPLK[TS]DSKEDDGQE1A	316
hB7-H2	266	VWVAV[IG-W]ORDR[Q]HSYAGAWA[SP]ET-ELTG[V]	302
hB7-H1	251	GWA[J]HIF-RLRKGMMDVKKCG[Q]D[TNSKK]-QSDTHLEET	290
hB7-2	254	MMVFCLJLW[K]KKKPRNSYKCGNTM[REES-S-EQT]KKREKIH[PI]ERSDEAQRFV[SSK]TSSCDKSDTCF	323
hB7-1	256	GIFV[CP]T-YCFAPR[ERR--RN]ER[RR]S-----VRPV	288

FIG. 5A



App. No.: 09/915,789
Assignant(s): Lieping Chen
B7-3 AND B7-H4, NOVEL IMMUNOREGULATOR
MOLECULES

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signal peptide

signal peptide MIRRGSPPGMVHVGAALGALWFCLTGALEEVQVPEDPVVALVGTDATLCCSFSPPEPGFSLAQNLIWQLTDTKQLVHSFAEGQDQGSAY *gV-like domain*

ANRTALFPDLAQQGNASLRLQRIVRVADEGSFTCFVSI RDGFSAAVSLQVAAAPYSKPSMTLEPNKDLRPGDTVTITCSSLVSYRGPPEAEVFW
IgC-like domain
TM
QDGQGVPLTGNNVTTSQMANEQGLFDVHSSLRVLGANGTYSCLVRNPVLQQDAHGSVTITGQPMTFPPPEALWVTVGLSVCLIAILVVALA

EVICWIRKIKOSCÉEENAGAE~~DQDGEGESK~~TALQPLKHSDSKEDDGQEI

FIG. 5B



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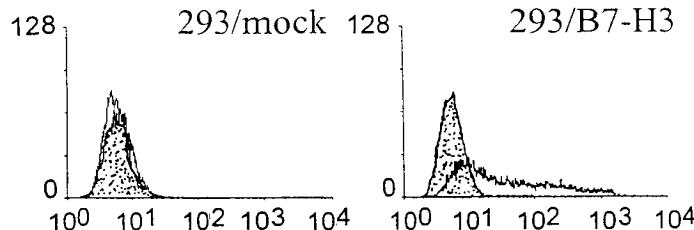


FIG. 6A

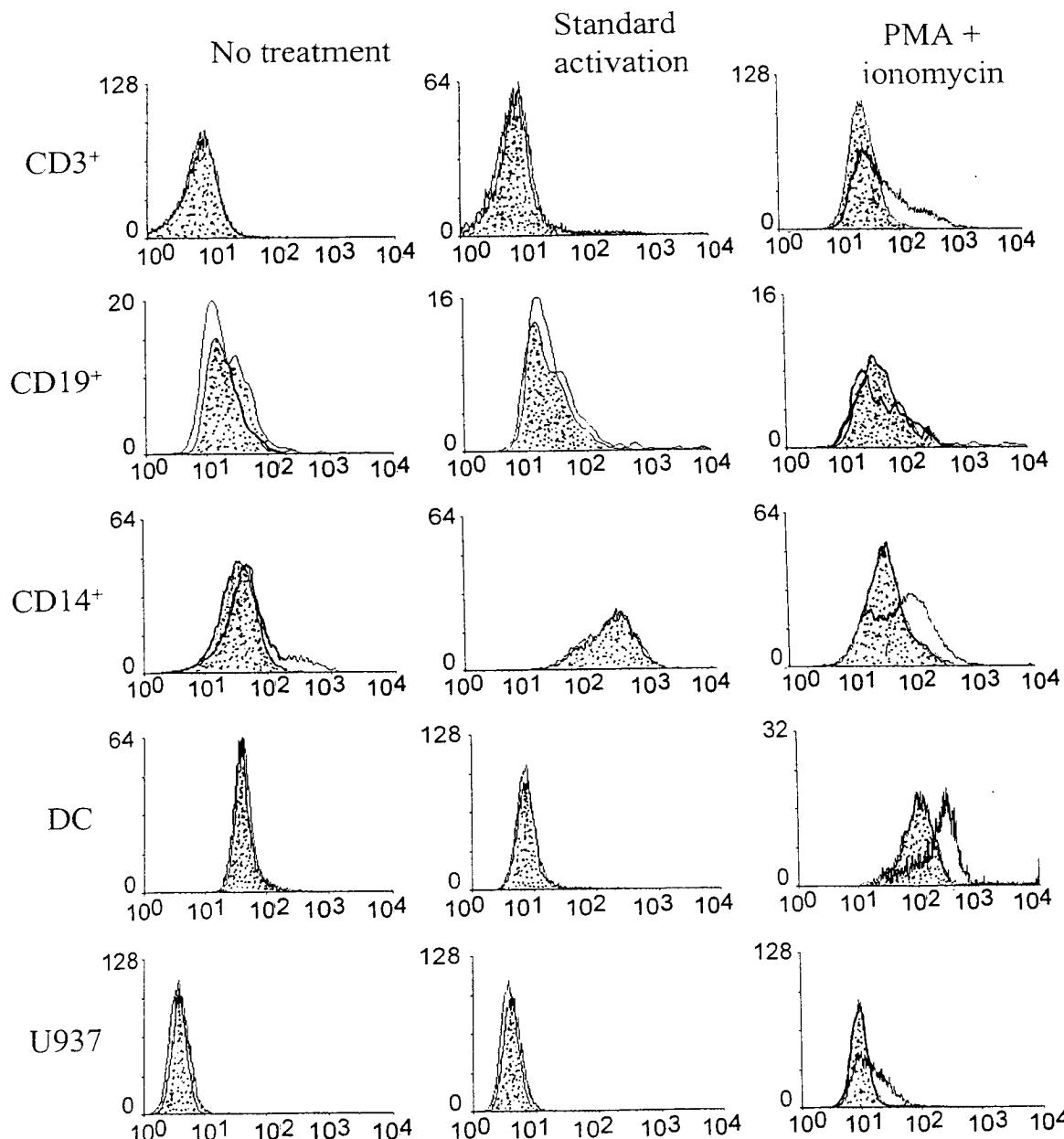


FIG. 6B



Appl. No.: 09/915,789
Applicant(s): Lieping Chen
B7-H3 AND B7-H4, NOVEL IMMUNOREGULATOR MOLECULES

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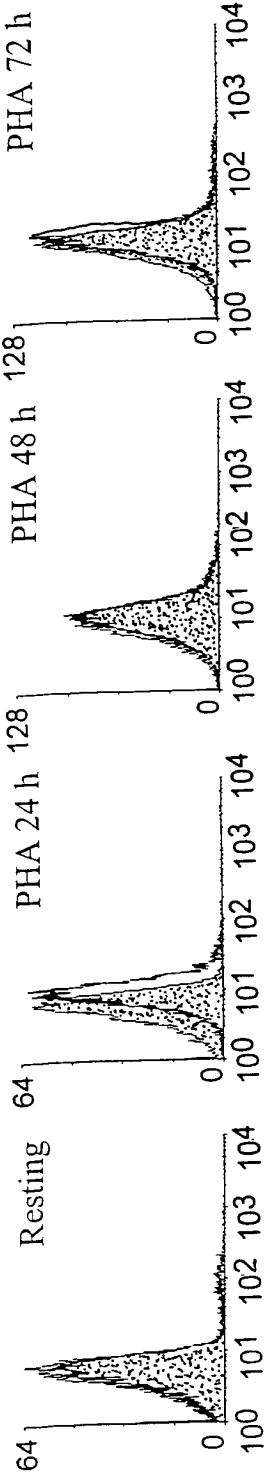


FIG. 7A

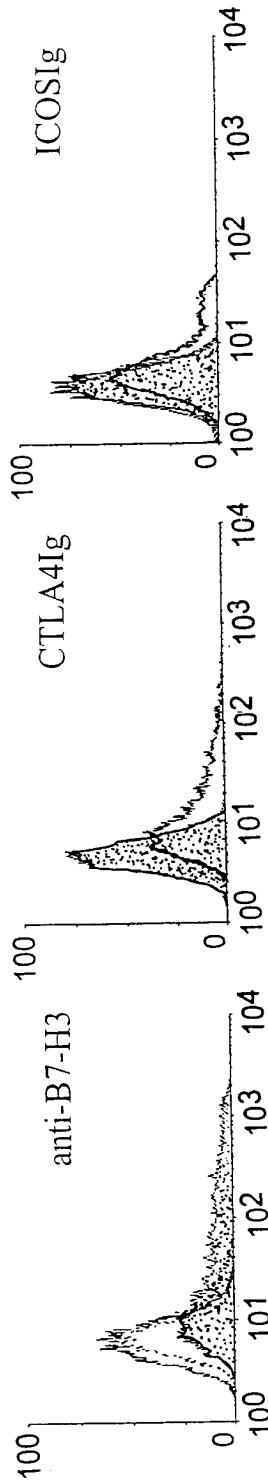


FIG. 7B



Appl. No.: 09/915,789
Applicant(s): Lieping Chen
B7-H3 AND B7-H4, NOVEL IMMUNOREGULATORY
MOLECULES

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ATGGCTTCCCTGGGGCAGATCCTCTTCTGGAGCATAATTAGCATCATCATTAT
TCTGGCTGGAGCAATTGCACTCATCATTGGCTTGGTATTCAGGGAGACACT
CCATCACAGTCACTACTGTCGCTCAGCTGGGAACATTGGGGAGGATGGAAT
CCTGAGCTGCACCTTGAAACCTGACATCAAACCTTCTGATATCGTATACAAT
GGCTGAAGGAAGGTGTTAGGCTTGGTCCATGAGTCAAAGAAGGCAAAGA
TGAGCTGTCGGAGCAGGATGAAATGTTAGGCTTGGTCCATGAGTCAAAGAAGGCAAAGA
GATCAAGTGATAGTTGGCAATGCCCTTTGCGGCTGAAAAACGTGCAACTCA
CAGATGCTGGCACCTACAAATGTTATATCATCACTTCTAAAGGCAAGGGAA
TGCTAACCTTGAGTATAAAACTGGAGCCTTCAGCATGCCGGAAAGTGAATGTG
GACTATAATGCCAGCTCAGAGACCTTGCAGCTGAGGCTCCCCGATGGTCC
CCCAGCCCACAGTGGTCTGGGCATCCCAAGTTGACCAGGGAGCCAACCTCTC
GGAAGTCTCCAATACCAGCTTGAGCTGAACACTTGAGAAATGTGACCATGAAG
GTTGTGTCTGTGCTCTACAATGTTACGATCAACACACATACTCCTGTATGAT
TGAAAATGACATTGCCAAAGCAACAGGGGATATCAAAGTGACAGAATCGGA
GATCAAAAGGCGGAGTCACCTACAGCTGCTAAACTCAAAGGCTCTGTGT
GTCTCTTCTTCTTGCCTACAGCTGGCACTTCTGCCTCTCAGCCCTACCT
GATGCTAAAATAA

FIG. 9

MASLGQILFWSIISIIILAGAIALIIGFGISGRHSITVTVASAGNIGEDGILSCTFEPD
IKLSDIVIQWLKEGVLGLVHEFKEGKDESEQDEMFRGRTAVFADQVIVGNASLR
LKNVQLTDAGTYKCYIITSKGKGNANLEYKTGAFSMPEVNDYNASSETLRCEA
PRWFPQPTVVVASQVDQGANFSEVSNTSFELNSENVTMKVVSVLYNVTINNTYS
CMIENDIAKATGDIKVTESEIKRRSHLQLLNSKASLCVSSFFAISWALLPLSPYLM
LK

FIG. 10



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B7-H4 ISGRHSITVTTVASAGNTGEDGILSCTE - EPOIKISPIVIGWLMKEG - VIGLWVHEFKEGKD
 B7-H2 LRADTOQEKEVRAMMGSDEVELSCACPEGSRFDINDMIVYWQTSISKTMWTHIPONSSL
 B7-H3.2 QVPEDPVVALVGTDAATLCCSFSPPEPGFSAQNLWQQLD - TQLVHSFAEGQD
 B7-H1 VTPKDLVYVEYGSNMTIECKFPVKEQLDAALIVYMEDEKNITQFVHGEEDLV
 B7-2 QAYFNETADLPCQFANSQNOSSELNFWDQENLWLMENYLGEKEFD
 B7-1 LNFFQLLVLAGLSHFCSGVIHWTKEVATLSCGHN - VSVEELAQTRIYQKEK - KMVLTMMSSGMMI

*
 B7-H4 ELSEQDEMFRGRRTAVFADQVIVGNAASLRLKNVQIDAGTYKONITTSKGK - GNALEYKTTGAFS - - -
 B7-H2 EN - VDSRYRNRAALSPAGMLRGDFSLRFNMTQDDEOKFHCLVLSQSLG - FQEVLSIEVTLHVAANFSV
 B7-H3.2 - - - QGSAYAANRRTALFPDLAGQNAASLRLRDRMRVADEGSFTCEMSIRDGF - SAAVSLQVAAPYSKPSMTL
 B7-H1 - - - QHSSYRORARLKDQISGNAALQITDVKLQDAGVYRCMISYGGAD - YKRITVKVNAPYN - - - KIN
 B7-2 S - - - VHSKYMGRTSFDSD - - - SWTLLRHLNQJQKDGLYCITHHKKPTGMIRHQMNSELSVLANFSQ
 B7-1 - - - - WPEYKNRRTF - D - ITNNLSIMIALRPSDEGYECVMLKYEKDAFKREHLLAEVITSVKADFPT

*
 B7-H4 PEMN - VDYNAS - SETRCEAPRMFPQP - TMWMAQVDDGANFSEVNTSEFELNSENITMKVVSVLY - - -
 B7-H2 PMSAPHSPSQD - EUETCTSINGYPRP - NYWINKTDSLLDQALQNDTIVFLNMRGLYDWSVSLRT - - -
 B7-H3.2 EPNKD-LRPGD - TVITTCPYRGPEA - EMFQD - - GGVPLTGNVWITTSQMANEQQLFDVHSVLRV - - -
 B7-H1 QRTLV - VDPVTS - EHELTCAQ - EGYPKA - EMVNTS - SDHQVLSGKTTTNSKREKLNFNTTSVLRJ - - -
 B7-2 PEIVPISNITENVYINTCSSIHYPEPKWVSVLLRTKINSTIEYDGIMOKSQDNVTELVDVSISSVSSFP
 B7-1 PSISDFEIPTSN - IRRITCSISGGPEP - HSM E - - - NGEELNAINITVSDPETELYAVSSKDF - - -

*
 B7-H4 NVTINNTSCMTENDIAKATGDI - - - - - KVTESEIKRRSHQLLNSK
 B7-H2 ARTPSVNIGGJENVLLQDNIVGSQGNDIGERDKITENPVSTGEKNAAT
 B7-H3.2 VLGANGTYSCLVRNPVLLQDAHG - - - - - SVTTLGQP - MTFPP
 B7-H1 NTTTNEIYCTFRRLDPEENHTA - - - - - ELVPELP - LAHPPNERTH
 B7-2 DVTSNMNTIFCILEITDKTRLLSP - - - - - FSTIELEDP - QPPPDHTP
 B7-1 NTTTNHSFMClikYGHLMNQF - - - - - NWNTKQE - - - HFPDN

FIG. 11



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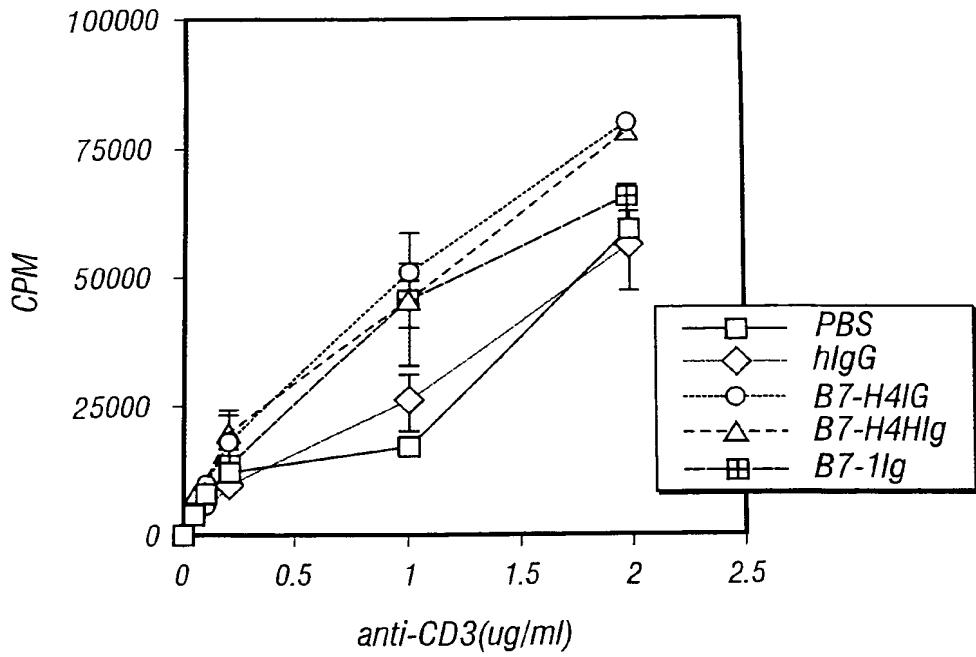


FIG. 12

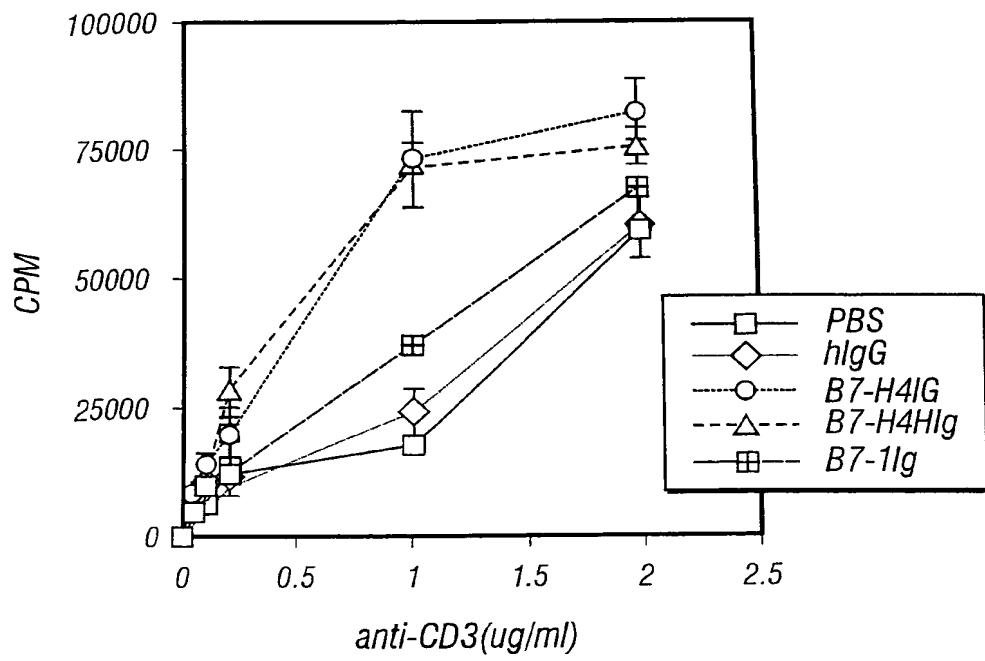


FIG. 13



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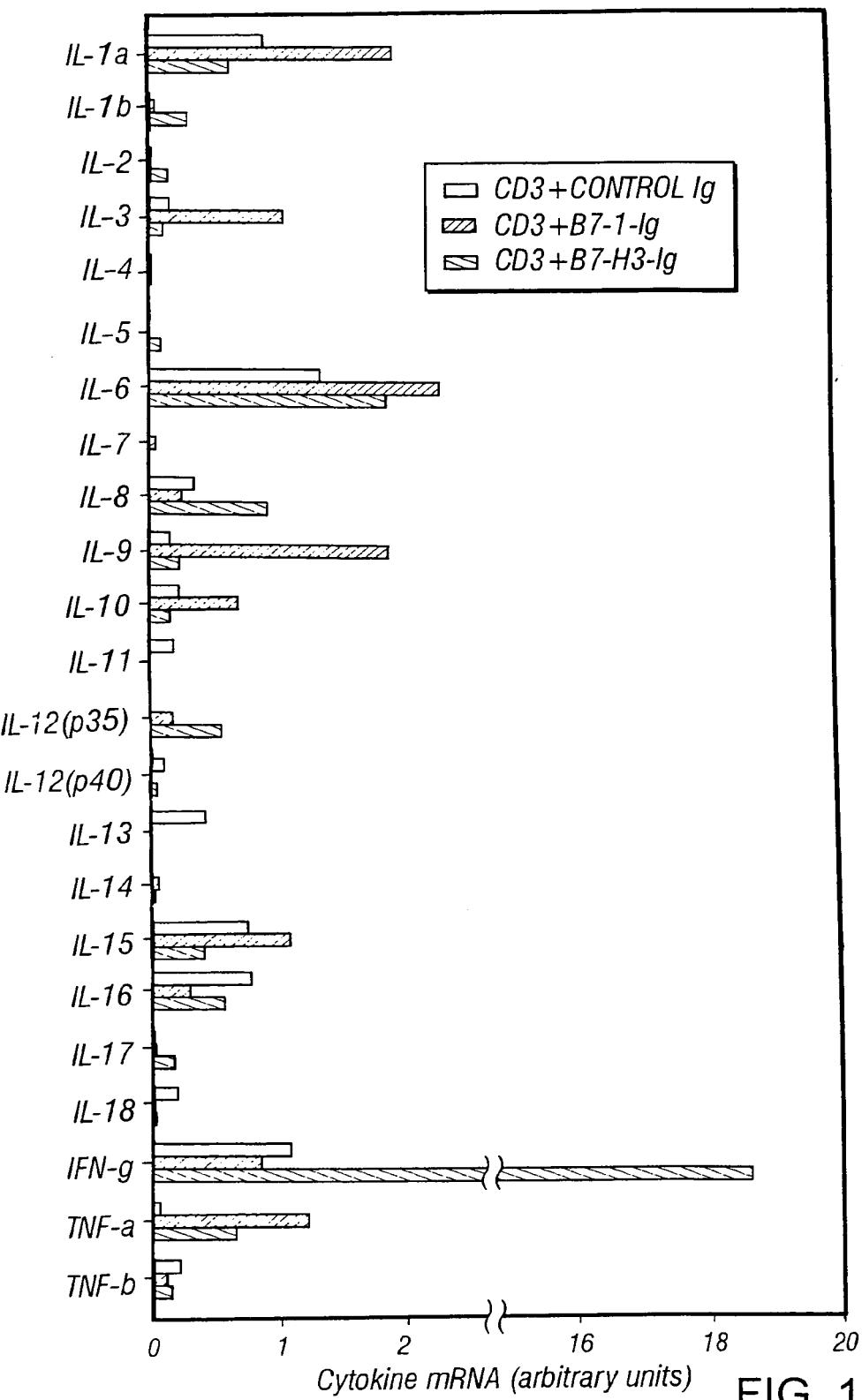


FIG. 14